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ECO-FRIENDLY ECONOMICS: INDIA'S SUSTAINABLE PATH WITH THE CARBONEX INDEX

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Abstract

Companies are nowadays aiming for sustainable development. Also, investors nowadays are concerned with the sustainable initiatives taken by these companies. Companies that are aiming for long-term initiatives over sustainable development will attract investments from investors' Carbonex is an index that measures the sustainable initiatives taken by the companies. The stock of Indian companies that are committed to mitigating risk arising from climate change is better performed this year. The Sensex has also jumped this year. This index in person provides an effective way for equity investors to manage the risk of climate change over the period. It becomesnecessary for a country like India, to access the effectiveness of a sustainability-based index and whether it is creating any improvement in the economy due to the improvement in the price and return of the Carbonex index. A detailed analysis has been made of the BSE Carbonex index andits effect on developing the economy. The price and returns have been taken to analyze the true picture of this index on the country's development. The entire indices have been selected and the analysis has been made using the advanced econometric software EViews in concluding the resultsof the data used.

Keywords: Carbonex, price, return, effect, relationship, and development.

Introduction

Companies are nowadays aiming for sustainable development. Also, investors nowadays are concerned with the sustainable initiatives taken by these companies. Companies that are aiming for long-term initiatives over sustainable development will attract investments from investors' Carbonex is an index that measures the sustainable initiatives taken by the companies. The stock of Indian companies that are committed to mitigating risk arising from climate change is better performed this year. The Sensex has also jumped this year. This index personally provides an effective way for equity investors to manage the risk of climate change over the period.

This index is introduced to provide a benchmark and increase awareness about the dangersposed by climate change. It will enable investors to gauge the performance of the constituent companies of the BSE-100 index regarding their commitment to greenhouse gas emission reduction. Constituents of BSE Carbonex are over or underweight compared to the benchmark based on their performance in the assessment process. The assessment will be based on the carbonemission and carbon efficiency of companies. The index will encourage people to invest in companies performing well on the index thus promoting low carbon growth. The Index has been developed with the help of expertise from the U.K.

Review of Literature

Higher economic advantage will also be achieved if an organization's beneficial environmental practices increase (Wagner, 2013). Therefore, the increased environmental contribution by Indian organizations might outweigh the negative effects of the COVID-19 fiasco in the long run.
The S&P BSE CARBONEX, which helps investors in India understand the risk associated with the companies' performance in relation to climate change, is a good indicator of environmental risk reduction. For investor decision-making, this is just as effective as the BSE SENSEX (Bhandari et al., 2020). Similarly, investors are guided to invest in companies that pose less of a harm to the environment by BSE GREENEX, the greenhouse gas-emission performance indicator of BSE-listed companies (Bhattacharya, 2013). These indices have also been subject to considerable criticism.
. It has been said that the indexes GREENEX and CARBONEX are still in their infancy (Sharma & Jasuja, 2020). However, investors that care about the environment are more interested in the GREENEX because of its low volatility (Choudhary & Jain, 2018). Most importantly, during past stock market crises, these socially conscious indices have attracted more investment in the Indian economy than their market-capitalization-based counterparts, such as SENSEX and NIFTY (Tripathi & Bhandari, 2015).

Statement of the Problem

It becomes necessary for a country like India, to access the effectiveness of a sustainability-basedindex and whether it is creating any improvement in the economy due to the improvement in the price and return of the Carbonex index. A detailed analysis has been made of the BSE Carbonexindex and its effect on developing the

economy. The price and returns have been taken to analyzethe true picture of this index on the country's development. The entire indices have been selected and the analysis has been made using the advanced econometric software EViews in concluding the results of the data used.

The above problem has been discussed along with research problems:

Whether BSE carbon index has any cause or effect on economic factors in India?What kind of relationship and impact does it create on the economic factors?

Objectives of the Study

- To study the cause and effect of the Carbonex index on select Macroeconomic factors inIndia.
- To analyze the Relationship between Carbonex index on select Macroeconomic factors inIndia.
- To examine the impact of the Carbonex index on select Macroeconomic factors in India.

The hypothesis of the Study

- There is no significant cause and effect of the Carbonex index on select Macroeconomicfactors in India.
- There is no significant relationship between the Carbonex index on select Macroeconomicfactors in India
- There is no significant impact of the Carbonex index on select Macroeconomic factors inIndia

Research Methodology

The study is analytical in nature

Source of Data

The data are a secondary source of information and are collected from the official websites of theNational Stock Exchange, Reserve Bank of India, the world bank, and other news articles, journals,and magazines.

Period of the Study

The study period covers from 2019 Jan to 2021 Dec.

Tools used for the study

Statistical tools are used for the study such as granger causality, covariance analysis, andregression analysis.

Analysis and Interpretation

There is no significant cause and effect of the Carbonex index on select Macroeconomic factors inIndia.

Pairwise Grangers Causality for BSE Carbonex and Macroeconomic Factors in IndiaTable 1.1

Null Hypothesis:	Obs	F-Statistic	Prob.
Export does not Granger Cause BSE_Carbonex	31	1.42388	0.2589
BSE_Carbonex does not Granger Cause Export		0.28536	0.7541
FER does not Granger Cause BSE_Carbonex	34	0.05227	0.9492
BSE_Carbonex does not Granger Cause FER		0.08868	0.9154
Gross_Domestic_Product does not Granger Cause BSE_Carbonex	34	0.10713	0.8988
BSE_Carbonex does not Granger Cause Gross_Domestic_Product		0.54352	0.5865
Import does not Granger Cause BSE_Carbonex	34	0.15986	0.8530
BSE_CARBONEX does not Granger Cause IMPORT		0.82386	0.4487
Inflation does not Granger Cause BSE_Carbonex	34	1.09869	0.3468
BSE_Carbonex does not Granger Cause Inflation		1.26605	0.2971
FER does not Granger Cause Export	31	0.24705	0.7829
Export does not Granger Cause FER		1.22910	0.3090
Gross_Domestic_Product does not Granger Cause Export	31	2.30140	0.1202
Export does not Granger Cause Gross_Domestic_Product		0.15816	0.8545

Source: computed from EViews

Table 1.1 depicts the Pairwise Grangers Causality for BSE Carbonex and MacroeconomicFactors in India. based on the results it can be concluded that none of the factors such as export, foreign exchange reserve, gross domestic product, or import is causing or influencing the forecasting of BSE Carbonex. The null hypothesis is rejected concluding that there is no cause and effect of BSE Carbonex on Macroeconomic factors nor do Macroeconomic factors have their causeand effect to forecast.

Pairwise Grangers Causality between Macroeconomic Factors in IndiaTable 1.2

Null Hypothesis:	Obs	F-Statistic	Prob.
Import does not Granger Cause Export	31	0.54553	0.5860
Export does not Granger Cause Import		0.86745	0.4318
Inflation does not Granger Cause Export	31	1.17133	0.3258
Export does not Granger Cause Inflation		2.56340	0.0964
Gross_Domestic_Product does not Granger Cause FER	34	0.97033	0.3909
FER does not Granger Cause Gross_Domestic_Product		0.04815	0.9531

Import does not Granger Cause FER	34	1.08386	0.3516
FER does not Granger Cause Import		14.1675	5.-05
Inflation does not Granger Cause FER	34	1.76729	0.1887
FER does not Granger Cause Inflation		1.44843	0.2514
Import does not Granger Cause Gross_Domestic_Product	34	0.09433	0.9103
Gross_Domestic_Product does not Granger Cause Import		0.40348	0.6717
Inflation does not Granger Cause Gross_Domestic_Product	34	2.04415	0.1477
Gross_Domestic_Product does not Granger Cause Inflation		0.36450	0.6977
Inflation does not Granger Cause Import	34	2.07287	0.1441
Import does not Granger Cause Inflation		2.82871	0.0755

Source: computed from EViews

Table 1.1 depicts the Pairwise Grangers Causality for Macroeconomic Factors in India. based on the results it can be concluded that none of the factors such as export, foreign exchange reserve, gross domestic product, or import is causing or influencing forecasting any of the macroeconomic factors. The null hypothesis is rejected concluding that there is no cause and effectof Macroeconomic factors on any of the factors.

There is no significant relationship between the Carbonex index on select Macroeconomic factorsin India

Covariance analysis for BSE Carbonex and Macroeconomic factors in IndiaTable 1.3

Probability	BSE Carbonex	Export	FER	Gross DomesticProduct
BSE Carbonex	170974.7			
	1.000000			

Export	1.49E+10	4.95E+15		
	0.510543	1.000000		
	3.410871	-----		
	0.0017	-----		
FER	493266.0	7.84E+11	2.56E+09	
	0.023570	0.220148	1.000000	
	0.135437	1.296462	-----	
	0.8931	0.2038	-----	
Gross Domestic Product	92.16679	-23515569	-7169.835	1.453910
	0.184859	-0.277236	-0.117486	1.000000
	1.080555	-1.657571	-0.679610	-----
	0.2877	0.1069	0.5015	-----
Import	2.37E+10	6.47E+15	1.33E+12	-25891628
	0.549880	0.882642	0.252653	-0.206172
	3.781911	10.78700	1.500045	-1.210369
	0.0006	**0.0000**	0.1431	0.2347
Inflation	83.96767	39251701	12917.65	-0.490675

	0.138388	0.380255	0.173933	-0.277318
	0.802704	2.361811	1.014633	-1.658108
	0.4279	**0.0242**	0.3177	0.1068

Source: computed from EViews

Table 1.3 Covariance analysis for BSE Carbonex and Macroeconomic factors in India. based on the results the Exports have a high co-variance and relationship with BSE Carbonex andImports do have co-variance along with a high positively correlated with BSE Carbonex and exports, apart from that inflation has a strong positive relationship with Exports. Hence the significant value is below 0.05 and the null hypothesis is the accepted conclusion that there is covariance as well as a relationship.

There is no significant impact of the Carbonex index on select Macroeconomic factors in India

Analysis of Regression for BSE Carbonex and Inflation in IndiaTable 1.4

Model summary for BSE Carbonex and Inflation in India

Model	R	R Square	Adjusted R Square	Std. The error inthe Estimate	Durbin-Watson
1	.104[a]	.011	-.018	1.568	.418
a. Predictors: (Constant), BSE Carbonex					
b. Dependent Variable: Inflation					

Source: computed from Spss

Table 1.4 shows the regression analysis between BSE Carbonex and Inflation in India. theR-value of .104 shows the relationship among the variables. And the R square value of .011 indicates how much of the total variation in the dependent variable is by the dependent variable. And the adjusted R square value is -.018 which shows the negative value so that shows a low model fit. And the Durbin-Watson value is below 2.0 which means there prevails a positive autocorrelation.

ANOVA for BSE Carbonex and Inflation in India.

Table 1.5

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	.911	1	.911	.370	.547[b]
	Residual	83.645	34	2.460		
	Total	84.556	35			
a. Dependent Variable: Inflation						
b. Predictors: (Constant), BSE Carbonex						

Source: computed from Spss

Table 1.5 explains the Anova for the BSE Carbonex along with Inflation in India. the significant value is above 0.05 which indicates there is no significant impact of BSE Carbonex onInflation. Hence the null hypothesis is rejected saying there is no impact of BSE Carbonex on Inflation in India.

The coefficient for BSE Carbonex and Inflation in IndiaTable 1.6

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1	(Constant)	4.790	1.375		3.484	.001
	BSE Carbonex	.000	.001	.104	.608	.547
a. Dependent Variable: Inflation						

Source: computed from Spss

Table 1.6 indicates the coefficient for BSE Carbonex and Inflation in India. the significantvalue is above 0.05 which indicates there is no significant impact of BSE Carbonex on Inflation. Hence the null hypothesis is rejected saying there is no impact of BSE Carbonex on Inflation in India.

Analysis of Regression for BSE Carbonex and Foreign Exchange Reserve in IndiaTable 1.7

Model summary for BSE Carbonex and Foreign Exchange Reserve in India

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate	Durbin-Watson
1	.026[a]	.001	-.029	51371.2520052	2.097
a. Predictors: (Constant), BSE Carbonex					
b. Dependent Variable: FER					

Source: computed from Spss

Table 1.7 shows the regression analysis between BSE Carbonex and Foreign Exchange Reserve in India. the R-value of .026 shows the relationship among the variables. And the R squarevalue of .001 indicates how much of the total variation in the dependent variable is by the dependent variable. And the adjusted R square value is -.029 which shows the negative value so that shows a low model fit. And the Durbin-Watson value is above 2.0 which means there prevailsa negative autocorrelation.

ANOVA for BSE Carbonex and Foreign Exchange Reserve in IndiaTable 1.8

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	61091331.540	1	61091331.540	.023	.880[b]
	Residual	89726188107.609	34	2639005532.577		
	Total	89787279439.149	35			
a. Dependent Variable: FER						
b. Predictors: (Constant), BSE Carbonex						

Source: computed from Spss

Table 1.8 explains the Anova for the BSE Carbonex along with Foreign Exchange Reservein India. the significant value is above 0.05 which indicates there is no significant impact of BSECarbonex on the Foreign Exchange Reserve. Hence the null hypothesis is rejected saying there isno impact of BSE Carbonex on the Foreign Exchange Reserve in India

The coefficient for BSE Carbonex and Foreign Exchange Reserve in IndiaTable 1.9

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	41193.709	45023.657		.915	.367
	BSE Carbonex	3.188	20.952	.026	.152	.880
a. Dependent Variable: FER						

Source: computed from Spss

Table 1.9 indicates the coefficient for BSE Carbonex along with Foreign Exchange Reservein India. the significant value is above 0.05 which indicates there is no significant impact of BSE Carbonex on the Foreign Exchange Reserve. Hence the null hypothesis is rejected saying there is no impact of BSE Carbonex on the Foreign Exchange Reserve in India

Analysis of Regression for BSE Carbonex and Import in IndiaTable 1.10

Model summary for BSE Carbonex and Import in India

Model	R	R Square	Adjusted RSquare	Std. The error in the Estimate	Durbin-Watson
1	.547[a]	.299	.279	91751763.6278193	.729
a. Predictors: (Constant), BSE Carbonex					
b. Dependent Variable: IMPORT					

Source: computed from Spss

Table 1.10 shows the regression analysis between BSE Carbonex and Import in India. theR-value of .547 shows the relationship among the variables. And the R square value of .299 indicates how much of the total variation in the dependent variable is by the dependent variable. And the adjusted R square value is -.279 which shows the positive model fit. And the Durbin- Watson value is below 2.0 which means there prevails a positive autocorrelation.

ANOVA for BSE Carbonex and Import in IndiaTable 1.11

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	122153915948204064.000	1	122153915948204064.000	14.510	.001[b]
	Residual	286225128379717472.000	34	8418386128815220.000		
	Total	408379044327921540.000	35			

a. Dependent Variable: IMPORT

b. Predictors: (Constant), BSE Carbonex

Source: computed from Spss

Table 1.11 explains the Anova for the BSE Carbonex along with Import in India. the significant value is below 0.05 which indicates there is a significant impact of BSE Carbonex on Import. Hence the null hypothesis is accepted saying there is an impact of BSE Carbonex on Importin India

The coefficient for BSE Carbonex and Import in IndiaTable 1.12

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-120599885.621	80414624.491		-1.500	.143
	BSE Carbonex	142546.811	37421.245	.547	3.809	.001

a. Dependent Variable: IMPORT

Source: computed from Spss

Table 1.12 indicates the coefficient for BSE Carbonex along with imports in India. the significant value is below 0.05 which indicates there is a significant impact of BSE Carbonex on Import. Hence the null hypothesis is accepted saying there is an impact of BSE Carbonex on Importin India

Analysis of Regression for BSE Carbonex and Gross Domestic Product in IndiaTable 1.13

Model summary for BSE Carbonex and Gross Domestic Product in India

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate	Durbin-Watson
1	.110[a]	.012	-.017	1.143	.436
a. Predictors: (Constant), BSE Carbonex					
b. Dependent Variable: GROSS DOMESTIC PRODUCT					

Source: computed from Spss

Table 1.13 shows the regression analysis between BSE Carbonex and Gross Domestic Product in India. the R-value of .110 shows the relationship among the variables. And the R squarevalue of .012 indicates how much of the total variation in the dependent variable is by the dependent variable. And the adjusted R square value is -.017 which shows the negative value so that shows a low model fit. And the Durbin-Watson value is below 2.0 which means there prevailsa positive autocorrelation.

ANOVA for BSE Carbonex and Gross Domestic Product in IndiaTable 1.14

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	.546	1	.546	.417	.523[b]
	Residual	44.454	34	1.307		
	Total	45.000	35			
a. Dependent Variable: GROSS DOMESTIC PRODUCT						
b. Predictors: (Constant), BSE Carbonex						

Source: computed from Spss

Table 1.14 explains the Anova for the BSE Carbonex along with Gross Domestic Productin India. the significant value is above 0.05 which indicates there is no significant impact of BSECarbonex on the Gross Domestic Product. Hence the null hypothesis is rejected saying there is noimpact of BSE Carbonex on the Gross Domestic Product in India

The coefficient for BSE Carbonex and Gross Domestic Product in IndiaTable 1.15

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.864	1.002		4.854	.000
	BSE Carbonex	.000	.000	.110	.646	.523
a. Dependent Variable: GROSS DOMESTIC PRODUCT						

Source: computed from Spss

Table 1.15 explains the Anova for the BSE Carbonex along with Gross Domestic Productin India. the significant value is above 0.05 which indicates there is no significant impact of BSECarbonex on the Gross Domestic Product. Hence the null hypothesis is rejected saying there is noimpact of BSE Carbonex on the Gross Domestic Product in India

Analysis of Regression for BSE Carbonex and Export in IndiaTable 1.16

Model summary for BSE Carbonex and Export in India

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate	Durbin-Watson
1	.514[a]	.264	.242	61814261.88595	.903
a. Predictors: (Constant), BSE Carbonex					
b. Dependent Variable: Export					

Source: computed from Spss

Table 1.16 shows the regression analysis between BSE Carbonex and Export in India. theR-value of .514 shows the relationship among the variables. And the R square value of .264 indicates how much of the total variation in the dependent variable is by the dependent variable. And the adjusted R square value is .242 which shows the positive model fit. And the Durbin- Watson value is above 2.0 which means there prevails a negative autocorrelation.

ANOVA for BSE Carbonex and Export in IndiaTable 1.17

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46606791086495360.000	1	46606791086495360.000	12.198	.001[b]
	Residual	129914101065165888.000	34	3821002972504879.000		
	Total	176520892151661248.000	35			

a. Dependent Variable: Export1

b. Predictors: (Constant), BSE Carbonex

Source: computed from Spss

Table 1.17 explains the Anova for the BSE Carbonex along with Export in India. the significant value is below 0.05 which indicates there is a significant impact of BSE Carbonex on Export. Hence the null hypothesis is accepted saying there is an impact of BSE Carbonex on Exportin India

The coefficient for BSE Carbonex and Export in IndiaTable 1.18

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-51363660.371	54176295.487		-.948	.350
	BSE Carbonex	88049.807	25211.141	.514	3.492	.001

a. Dependent Variable: Export

Source: computed from Spss

Table 1.18 explains the Anova for the BSE Carbonex along with Export in India. the significant value is below 0.05 which indicates there is a significant impact of BSE Carbonex on Export. Hence the null hypothesis is accepted saying there is an impact of BSE Carbonex on Exportin India

Findings of the Study

- There prevails a strong positive relationship between BSE Carbonex and Exports
- There also has positive relations between BSE Carbonex and Imports

- There is a strong impact of BSE Carbonex on imports as well as Exports of India.

Conclusion

Socially responsible investing has gained importance among market participants worldwide, and India too has aligned itself with the global trend, becoming more sensitive towards the environmental aspects of doing business. Green investment in India may be in a nascent stage, butit is evolving and expected to gain momentum in the coming years. Many stakeholders, includingthe government, corporations, and market participants have become environmentally conscious and are looking to integrate environmental aspects of businesses into their mainstream investmentstrategies. BSE Carbonex Index is one such element for sustainable growth and it has created an impact on the imports and exports of India in the case of Carbon trading. So shortly Carbonex index will be a market leader in the reduction of carbon emissions.

References

- Bollerslev, T. (1986). Generalize autoregressive conditional heteroskedasticity. Journal of Econometrics, Elsevier, 31(3),307
- Derwall, J., Guenster, N., Bauer, R., & Koedijk, K. (2005). The eco-efficiencypremium puzzle. Financial Analysts Journal, 61(2), 51-63.
- Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. Journal of Financial Economics, 101(3), 621-640
- . Engle, R. (1982). Autoregressive conditional heteroscedasticity with estimates of thevariance of United Kingdom inflation. Econometrica, 50(4), 987-1007.
- Gujarati, D., & Sangeetha, N. (2007). Basic econometrics. New Delhi: Tata McGraw-Hill.
- Luck, C., & Pilotte, N. (1993). Domini social index performance. Journal of Investing, 2(3), 60-62.